

## REMARKS

### I. Status of the claims

Claims 1, 3-11, 13-14, and 17-29 are pending. Claims 2, 12, 15, and 16 have been cancelled, and claims 1, 3, 4, 6, 11, 13, 28, and 29 have been amended. Claim 1 has been amended by narrowing the Z substituent to that recited in claim 2 and introducing the limitations recited in claims 12 and 16; claims 3, 4, 6, 13, 18, 28, and 29 have been amended to correct a claim dependency; and claim 11 has been amended in view of the amendments to claim 1.

No new matter has been introduced by these amendments. As the subject matter in the amendments has previously been introduced in the dependent claims, no new search is required, and Applicants respectfully request the examiner to enter the amendments.

### II. Rejections based on Mollet and Richmann

The examiner has maintained the following rejections: claims 1-5, 7-16, 18, 22-25, and 27-29 are rejected under 35 U.S.C. § 102(b) as anticipated, or in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,919,754 to Mollett et al. ("Mollett"); claims 1-5, 7-14, 18, and 24-29 are rejected under 35 U.S.C. § 102(b) as anticipated, or in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,248,388 to Richmann et al. ("Richmann"); and claims 20 and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mollett or Richmann in view of U.S. Patent No. 5,228,369 to Ishibashi et al. ("Ishibashi"). Applicants respectfully traverse these rejections.

Applicants refer to the remarks previously presented as distinguishing the claimed invention over Mollett and Richmann. The disclosures of Mollett and Richmann are merely general disclosures relating to the application of a wide range of organo-modified siloxane compounds for use in methods of deinking. Neither Mollett nor Richmann disclose the specific selection of compounds for use in the present invention and thus the properties or functions of the claimed invention cannot be considered inherent in these documents.

Certain dependent claims, in particular, are not taught by Mollett or Richmann. With regard to claim 14, the disclosures of Mollett or Richmann do not teach or suggest the claimed hydrophile-lipophile balance (HLB), as alleged by the examiner. The HLB factors do not vary consistently in line with any parameters of the claimed invention or any parameters disclosed in

Mollett and Richmann. Therefore, one skilled in the art would not arrive at the HLB range based on the disclosed organo-modified polysiloxanes of Mollett or Richmann. Additionally, the examiner has failed to shown that the claimed HLB range would be inherently present. See page 5 of the Office Action. The examiner's sole reliance of the inherency finding rests on the disclosure of the organo-modified polysiloxanes, which, as Applicants stated above, does not consistently align with the HLB factors. Applicants respectfully submit that the examiner has not met the burden of showing that the claimed HLB range would *necessarily* result from the disclosures of Mollett or Richmann. Without evidence in the form of a basis in fact and/or technical reasoning to support the inherency determination, the examiner cannot maintain the rejection. See MPEP § 2112.

While Mollett fails to disclose any HLB range, Richmann only discloses an HLB range of 10 or higher for deinking processes involving removing the detached ink by flotation, as recited in Applicants' claimed invention. In disclosing flotation, Richmann specifically describes this in the context of a "traditional process," which Richmann defines as having an HLB higher than 10. See col. 1, lines 61-66. The process described in Richmann, on the other hand, has an HLB ranging from 0.5-10. In view of this disclosure, one skilled in the art would not be motivated to use a flotation process in the Richmann process or in any other deinking process operating at an HLB range below 10. This is not an example of the prior art disclosing an alternative embodiment described as somewhat inferior, but rather an example of the prior art disclosing an alternative that is incompatible with the disclosed invention. In this context, Richmann clearly teaches away from a deinking process that (a) involves a flotation step, and (b) operates at an HLB range below 10. Therefore, Richmann clearly fails to teach or suggest claim 14.

### III. Additional Experimental Data

In response to the examiner's assertion that Applicants have not provided sufficient experimental data to demonstrate the special properties of the claimed organo-modified siloxanes, Applicants provide the following data, entitled "Additional Experimental Data."

As shown in the data and discussed below, nothing in either Mollett or Richmann teaches or suggests that the specific range and selection of compounds recited in the claimed invention

would be expected to provide any unexpected or particularly beneficial properties for methods of deinking waste paper. The data demonstrates the special properties of the selection of compounds of claim 1 for use in the invention. As can be surprisingly seen, only the compounds having been prepared in accordance with the variables recited in claim 1 are able to show an improved performance. Other compounds, failing outside the ranges recited in claim 1, provide insufficient results and are incapable of performing to the levels of the compounds produced in accordance with the claimed invention.

It is the selection of the specific ranges of specific components in claim 1 that provide the unexpected properties. This particular selection of ranges and components is not disclosed in the prior art, such as Mollett or Richmann, and furthermore could not be inferred from a combination of either of these documents with Ishibashi.

As shown in the data, Applicants prepared nine organo-modified siloxanes (Siloxanes A-I), an amino-functional siloxanes (Siloxane J), and a carboxy-functional siloxane (Siloxane K). The siloxanes were prepared as samples, and analyzed against each other as well as samples prepared with a high percentage of a fatty acid additive (Fatty Acid), and a sample containing no additive (Blank).

Table 2 shows the improved results in a test designed to evaluate the whiteness before and after flotation. Siloxane H, a siloxane of the claimed invention, outperforms Siloxanes I, J, and K, as well as the blank sample. Only the fatty acid sample showed a similar whiteness difference, however the amount of fatty acid used in that sample was significantly higher (0.4 wt% vs. 0.1 wt%). Applicants emphasize that Siloxane H outperformed Siloxane I, an organo-modified siloxane that falls outside the scope of the invention on the basis of the percentage of silicon atoms substituted with the units from the formula (variable “w”). This small change in the percentage of silicon atoms that are substituted corresponds to a significant result in the whiteness difference.

Table 3 shows the results in a test designed to evaluate the whiteness before and after flotation, where the benchmark has been set as 62.3. As shown in the table, the organo-modified siloxanes of the invention (Siloxanes A, D, and G) meet the benchmark, whereas the organo-modified siloxanes falling outside the invention (Siloxanes B, C, E, and F) failed to meet the benchmark. The comparative siloxanes fell outside the claims for a variety of reasons. As

shown in Table 1, Siloxanes B and E fell outside the claimed invention on the basis of the molecular weight, and Siloxanes C and F fell outside the claimed invention on the basis of the molecular weight and the percentage of silicon atoms substituted with the units from the formula (variable "w").

The additional data demonstrate that there is a novel and non-obvious selection of different variables in the preparation of organo-modified siloxanes that leads to improved results in the context of deinking printed paper. The different variables for this selection process are recited in claim 1. When similar organo-modified siloxanes are prepared using different components or different amounts of the components that fall outside the recited ranges, the performance of the siloxane used as an additive in a deinking method decreases. In the additional data, the examples show that in instances (a) when the molecular weight is too low, (b) when the percentage of silicon atoms that are being substituted is too low, or (c) when the percentage of silicon atoms that are being substituted is too high, the resulting organo-modified siloxanes produce poorer results.

This selection of these variables--and the improved results shown in the additional data--distinguishes the claimed invention over the art cited by the examiner, in particular the Mollett and Richmann references. As the benefits are clearly linked to the selection of the relevant criteria, the selection of variable at the levels recited in the claims is neither suggested nor implied or even possible from the reading of either Mollett or Richmann. This is especially true in view of scant disclosures of polysiloxanes in Mollett and Richmann references, both of which fail to describe recited variables such as  $R^2$ ,  $R^3$ , q, and s.

If desired by the examiner, Applicants are willing to incorporate the additional experimental data provided in this response in the form of a declaration under 37 C.F.R. § 1.132 for resubmission.

## VI. Conclusion

Applicants respectfully request reconsideration of this application in view of the above amendments and remarks. In particular, Applicants respectfully request that the examiner withdraw the rejections under 35 U.S.C. §§ 102(b) and 103(a) based on Mollett and Richmann.

**Except** for issue fees payable under 37 C.F.R. §1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 19-2380. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. §1.136(a)(3).

Respectfully submitted,

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